Development and Usability of a Samoan Vocabulary Mobile App

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Abstract: There were 143 Samoan students taking courses at the University of Hawaii at Manoa during last year's Fall semester. Some of these students were also enrolled in Samoan classes. The courses were taught in the traditional way. The students taking these courses learned the Samoan culture and language through textbooks, articles and old folklores or legendary shared by the instructor. However, these lessons may not be engaging enough for some students to learn the Samoan culture or the language. Although the students have a variety of resources available to them and a few mobile applications previously developed, the researcher decided to design an effective and engaging mobile application to enhance Samoan language classes.

To assist students in their Samoan language learning, a mobile language learning application, "Samoan Vocabulary App," was developed and a usability study conducted. The purpose of this usability study was to develop and evaluate the ease of use of a Samoan vocabulary app for beginner-intermediate Samoan students at a large university in Hawaii. The study included two rounds of usability testing and examined the usefulness and effectiveness of the mobile application. A pre-survey, usability protocol script, post-survey and an observational/interview guide helped to identify the issues in the mobile application. They also helped with improvements to the app. The changes were made after each round of testing. Its use is recommended to help students who are struggling or want to learn the Samoan language to using the mobile application.

Introduction

Technology has become a tool for teaching and learning. It is well known that our lives have been affected by how technology evolves around us and plays a significant role in education. Samoan, is the language that is spoken in the Samoan Islands and it's considered the language of Samoan diaspora since the migration of the Samoan people to different countries. This migration has led to loss of culture, language, and to its roots. Samoan is the heritage language of more than 20,000 Samoans living on the island of Oahu alone (Samoan Language & Literature, 2014).

Last semester, about 143 Samoan students taking courses at the University of Hawaii at Manoa and were also registered in Samoan classes (Institutional Research & Analysis Office, 2016). In my experience, the Samoan students in the Samoan language program

are learning about the Samoan culture and language by using textbooks, articles, and stories shared by the instructor. The lessons provided are the history, culture, language, vocabulary lists, Samoan stories, Samoan movies, activities, and grammar exercises, may not be engaged enough for some students to learn the culture and in particular the Samoan language. Although students have access to a variety of learning materials in class, the bookstore or library, there are currently very few mobile applications developed for learning the Samoan language.

With this in mind, a Samoan vocabulary mobile application was designed and evaluated in hopes of helping students with their Samoan language learning. Therefore, the purpose of this usability study was to develop and evaluate the ease of use of a Samoan vocabulary mobile app for beginner-intermediate Samoan students at a large university in Hawaii.

Literature Review

Mobile devices are rapidly attracting new users, increasing capacity, and allowing more sophisticated use (Viberg and Gronlund, 2012). With evolution of technology in education, it is the educator's responsibility to understand the effectiveness of using mobile devices for language learning before they integrate it in the classroom. However, the mobile device can provide advantages as it has been revealed that mobile device can be a successful tool for delivering language-learning materials to the student.

There has been much research into language learning and the increase of using mobile devices in education. Several of these studies have shown the effectiveness and usefulness of mobile devices. According to one of the studies, a smartphone app was designed to help Chinese college students to improve their ability in learning English vocabulary (Wu, 2015). The application was tested based on the effectiveness and usefulness for the users, and the study revealed that most of the students using the app outperformed those without the app. Similarly, Agca and Ozdemir (2013), stated in their article, that a mobile assisted learning environment had increased students' level of vocabulary for the target words. However, the mobile device was not only successful, but learners were also more engaged.

Lu (2008) examined the effectiveness of SMS vocabulary lessons of limited lexical information on the small screens of mobile phones. The study tested thirty students, but none of them learned language using mobile devices before. The study provided vocabulary lessons using both a mobile device and print material. This was done to determine the difference in the level of effectiveness between the two mediums. The data collected through surveys indicated that the overall of the study "the mobile phone groups have greater vocabulary gains than their paper group counterparts in both immediate and delayed post-tests" (pg. 519). Although there were some disadvantages that the students provided, "it's hard to concentrate on learning on the move" (pg. 522), the students felt that their learning increased as a result of having access and used a mobile device to learned vocabulary.

Ducate and Lomicka (2013) examined the affordances offered by iPod Touches to intermediate students of French and German. According to the data collected through this study, about "90% of the students gained more exposure to the target language outside of the classroom due to the device's mobility" (pg. 454). About "93% of the students felt that their learning increased as a result of having access to an iPod Touch throughout the semester due to the mobility of the device and accessibility of the apps and other features" (pg. 455). The movement of mobile devices and the ability to connect to the Internet from anywhere allows users to take advantage of the affordances for personal and academic uses. The learners can access their learning materials online at any time especially while waiting for their classes.

When creating the smartphone application, I took a good look at the book of *Essential mobile interaction design: Perfecting interface design in mobile apps* by Banga and Weinhold (2014), to get tips on developing a perfect interface for my application. I focused on finding the right design flow for the app "to make the best application possible while remaining true to the platform and focusing on reducing interface friction and creating a premium experience" (Banga and Weinhold, 2014). In the case of a vocabulary app, I needed a use a platform that contains components that can build a language app. However, I was careful to take consideration the 6 Steps for identifying usability problems, which will help me spot when users have problems in an interface (Sauro, 2013). My focus was not only on how to develop the app but also on who I would be testing this app with and what my protocol script to guide my study would be. With these ideas in mind, I modified a usability script presented by Krug (2010) to test participants and ultimately make improvements to the site at the end of each round of testing.

Project Development

This usability study is to improve the ease of use of the application and to examine the usefulness and effectiveness of the mobile application. Before the development of the mobile application, a wireframe and paper prototypes were created. The wireframes of the app were created using Google Drawings, designing the layout, content, buttons, labels and screens (Figure 1). The paper prototype was developed using PowerPoint and it provided an image of the mobile app. It has a logo, which is two Samoan flags, buttons for each screen, and images (Figure 2).

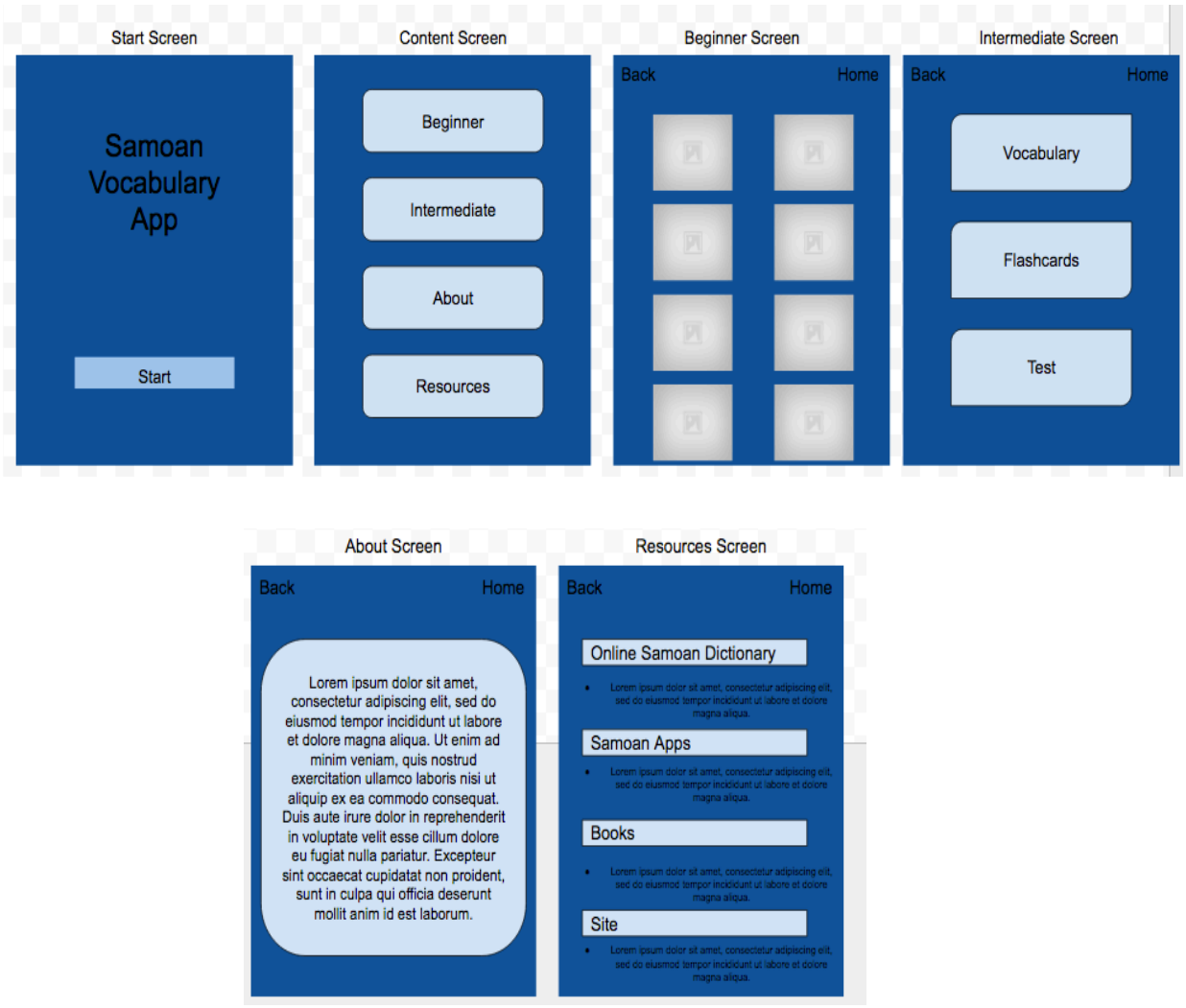

Figure 1. Wireframe of Application

Several mobile application platforms were explored before building the app to decide which one would work best to develop the mobile app that I was designing. The app was supposed to be designed for iOS devices, but unfortunately, there are no online development tools that met the required criteria for this study. The tool also needed to be a free or low-cost platform, and as well as have components for building a language-learning app. So, the Samoan Vocabulary mobile app was created using MIT's App Inventor 2 (http://appinventor.mit.edu/explore/). This application was chosen because it was the only online tool for development found during the exploration phase that met the criteria and additionally provided a simple graphical building interface for beginners.

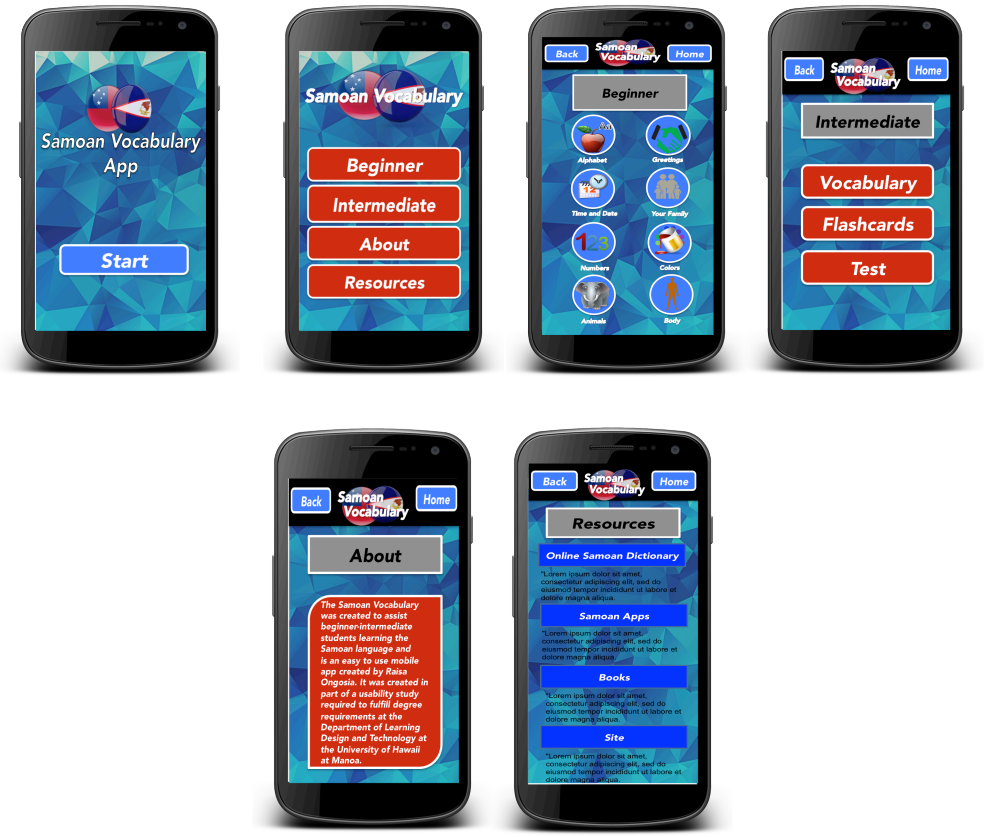

Figure 2. Paper Prototype

MIT App Inventor 2 is a free platform with blocks language for building Android apps, and that allows for quick development of the mobile application. The development tool allows the user to preview the app both from the laptop emulator and on a mobile device. Even though this tool is for designing apps for Android devices, the user can still use a Mac computer to build the application. Though the user will still need an Android device to view and launch the app on the mobile screen. To create the Samoan Vocabulary app, I could used the components and change the component's properties using the tools provided in the MIT App Inventor. The logo, buttons, icons, and images were created using PowerPoint and then uploaded into the instrument through each screen (Figure 3). The user can use the drag-and-drop and a visual programming approach when dealing with the blocks. Once the user adds the entire component for each screen, they can program the elements of each screen through visual parts of code that are placed on the screen (Figure 4). The user uses the blocks to connect all screens and also to connect the actions that occur as the user interacts with the app.

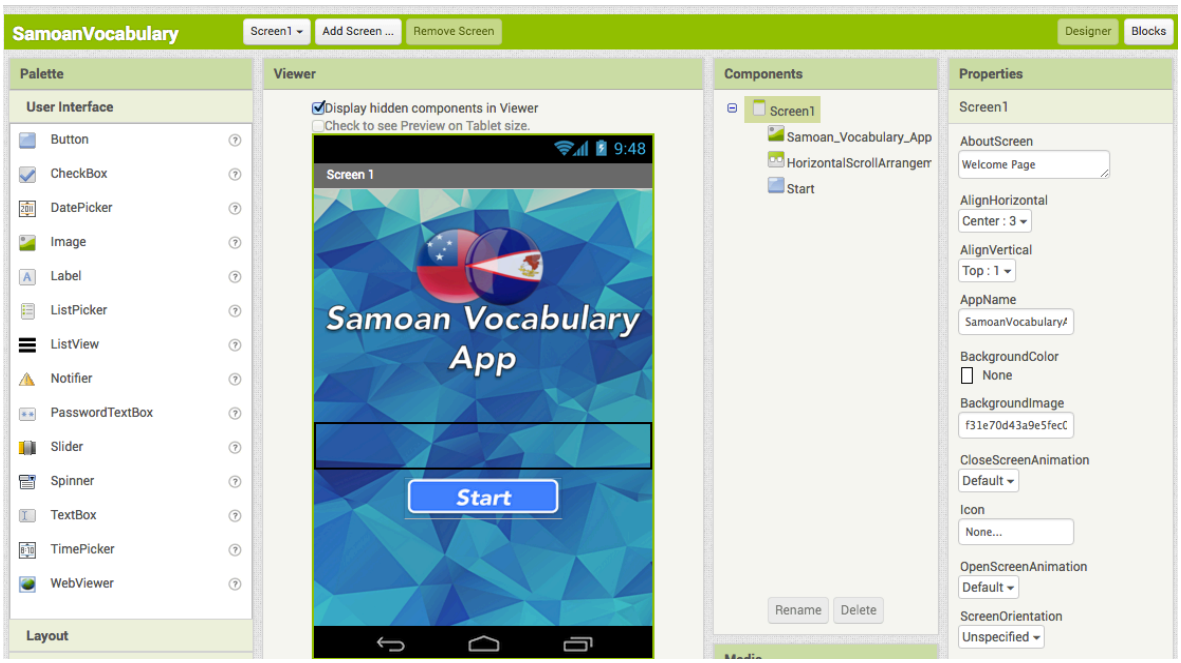

Figure 3. Screenshot of working prototype (drag-and-drop components)

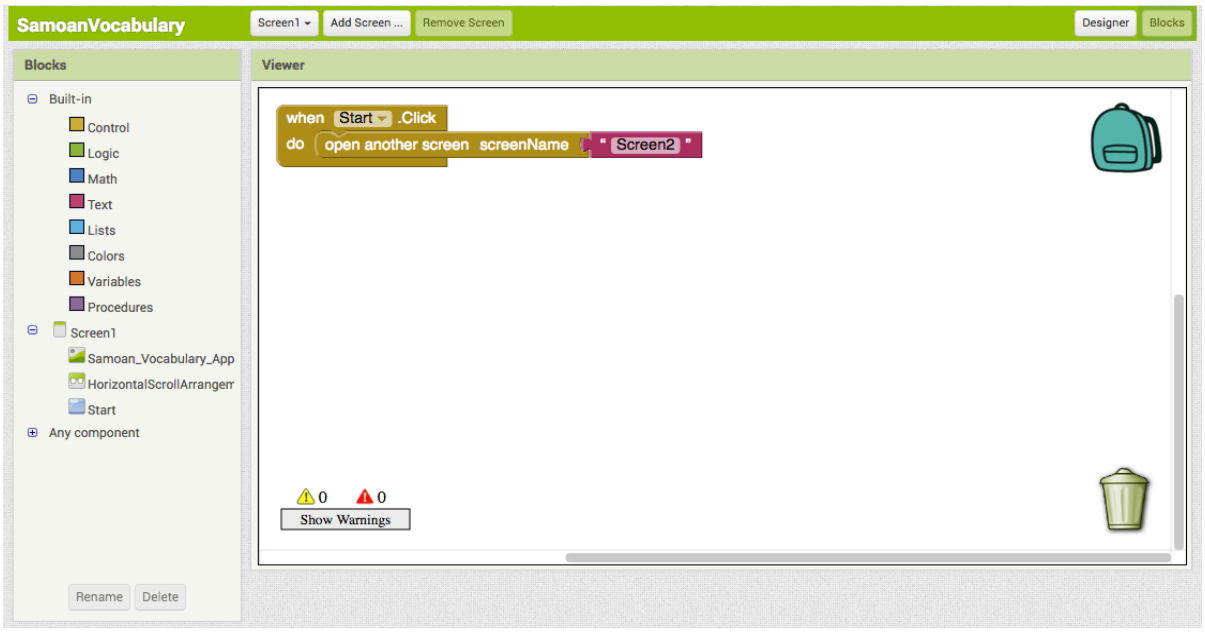

Figure 4. Screenshot of working prototype (Blocks)

Methodology

The goal of this usability study was to examine the usefulness and effectiveness of the Samoan mobile vocabulary application that I created.

The target population for this usability study was beginner-intermediate Samoan students at a large University in Hawaii. These college students were degree seeking and have knowledge and experience with mobile applications. They were a diverse group of varying ages and are technically skilled. A professor from the Samoan Department at the university was asked to assist in the recruitment of Samoan students for the usability study. She was sent a recruitment email to forward to the Samoan college students who are taking Samoan course on campus. The flyer included in the email gave basic information about the study (Appendix A). Participants were directed to contact me for more details and to schedule tests. The plan was to test at least 10 participants in two rounds of testing with 5 participants each, in which each participant was be tested 40-50 minutes.

The usability test took place in-person at various places on university campus. Participants were asked to sign the consent form (Appendix E) first before they can participate in the study. Surveys, usability test protocols, and an observation/interview guide were used to conduct this study. The pre-survey was created using Google Forms to collect demographic information from participants, as well as any required consent forms needed. Information included demographic information, Samoan language experience, and technical skills. The survey consisted of a total twenty-one questions, which the participant will take about five minutes to complete before participating in the study (Appendix B).

The usability protocol followed after completing the form and the pre-survey. The usability test protocol was used as a guide for the study. Participants were asked to complete five tasks using the mobile application and were also asked to think out loud while doing so. The five tasks are navigating the Samoan Vocabulary application homepage, reviewing beginner's lessons of vocabulary, reviewing intermediate lessons of vocabulary, testing their vocabulary knowledge, and navigating the app to find help and resources. This script was used to guide the participants as they navigated through the application (Appendix C). However, during the testing, there are some of the participants that were recorded as they interact with the mobile application. An observation/interview guide was created and used to write down notes during the usability study. Data collected from this protocol were recorded and analyzed.

After completing the tasks, participants were asked to complete a post-survey to collect data regarding their thoughts and experience on navigation, ease of use and effectiveness of the mobile application. The post-survey was created using Google Forms to gather information on overall satisfaction and feedback about the mobile app. Such information included design layout, navigation, ease of use, the effectiveness of mobile application and comments. The survey consists of a total of sixteen questions, which the participant took about 2-3 minutes to complete the survey (Appendix D).

Both quantitative and qualitative data were incorporated in this study. Qualitative data was collected through recorded semi-structured interviews and one-on-one observation of participants. The data were analyzed using content analysis. The quantitative data was gathered through a post survey using a Likert scale. The data were analyzed using descriptive statistics. Visualizations of qualitative and quantitative data were created to display for results.

Results

First round

There were five participants for the first round of usability testing. They are all female and range in age from 19-22. All participants were Samoan, although one of them didn't speak Samoan and doesn't know some Samoan words.

The participants were asked to complete and submit the consent form and the pre-survey before they began with the study. The testing was done in person, and each participant was provided with a mobile device to access the mobile application. The participants were asked to navigate through the mobile application while the researcher guided them through a series of scenario tasks from the usability script. They were asked to complete the five tasks from the protocol script, which would help identify problems with the mobile application.

The participants were asked to talk aloud about what they felt and thought while navigating through the app. The audio (participants' voices) and smartphone screen were recorded using Mobizen Screen Recorder during the sessions, but the participants themselves were not recorded. However, only two participants agreed to be recorded. After they have completed the five tasks, the participants were asked to complete a post-survey to collect data regarding their experience with navigation and usefulness of the mobile application. An observation/interview (Appendix F) guide was used during the testing to collect more feedback from the participants.

Participants in the first round were able to navigate through the app quickly except one. One of the participants was confused when I ask a question from one of the five tasks from the script. After completing the tasks from protocol script, the participants in the first round were invited to rate their experience with the application during the testing. "On a scale of 1 to 5, with 1 representing very difficult and 5 representing very easy". Four participants rated their experience five, and one participant rated a three. The four participants find the app very easy to navigate and it's simple. However, it was pretty self-explanatory. The fifth participant thinks the app takes too long to load and it was confusing to her.

When asked to give feedback on how to improve the application designs, participants provided feedback that was used to make improvements to the app. The main comments from the participants were changing the bright red color to a dark red, shade and the questions, answer buttons to gray, adding instructions for the vocabulary content,

increasing the font size, removing the title from the flags and putting it below the flags and replacing the font color for resources to white. Changes were made in screens that the participants requested to improve it. (See the changes on the title page in Figure 5). (See the added instructions in the weather vocabulary lesson in Figure 6).

Figure 5. Before and after screenshots of the Content screen.

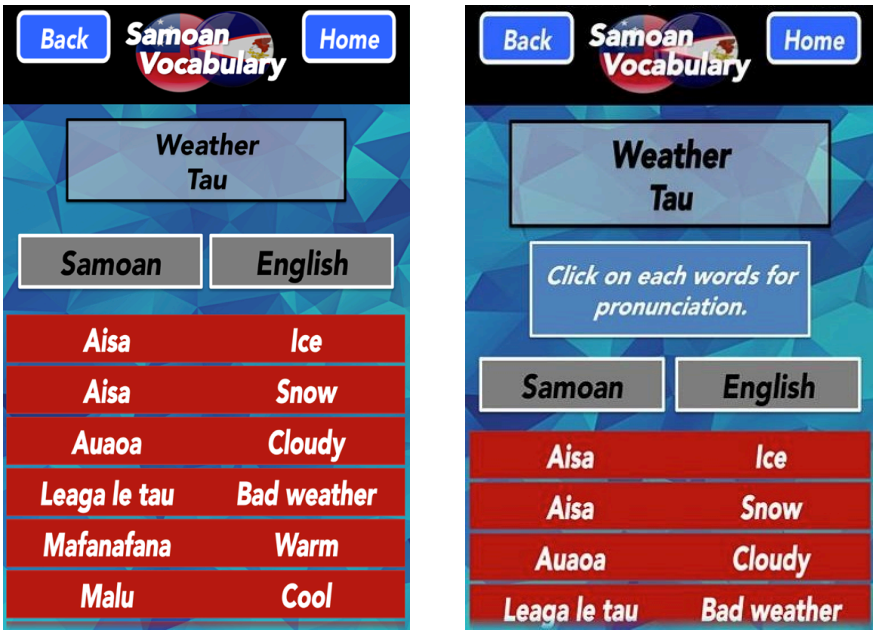

Figure 6. Before and after screenshots of Weather lesson

As suggested, the questions were also modified to shade the background of each question and change the answer buttons to gray (Figure 7). The font was increased for the greetings lesson with instructions included (Figure 8). The font color for the resources content was change from black to shaded white (Figure 9).

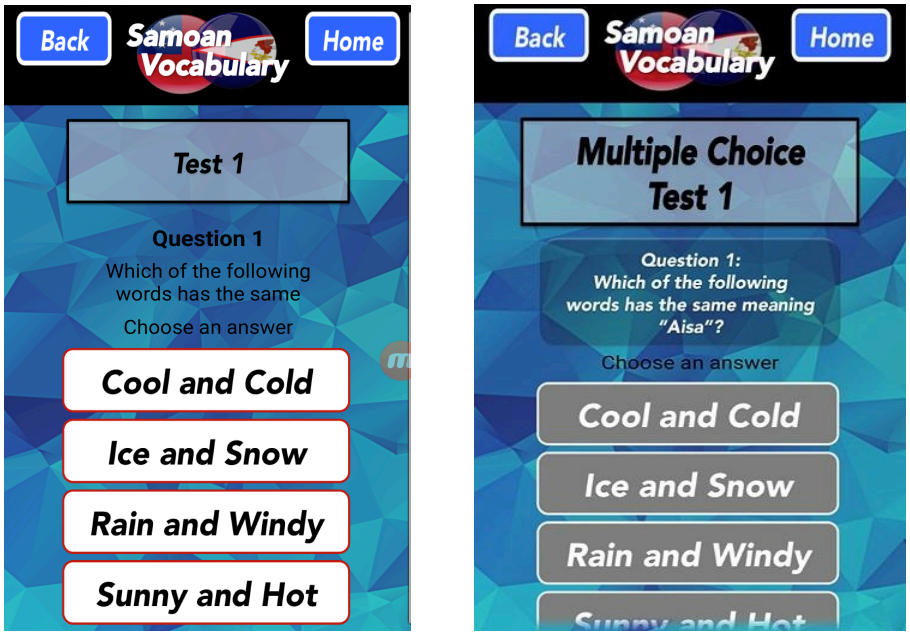

Figure 7. Before and after screenshots of Multiple Choice Test 1

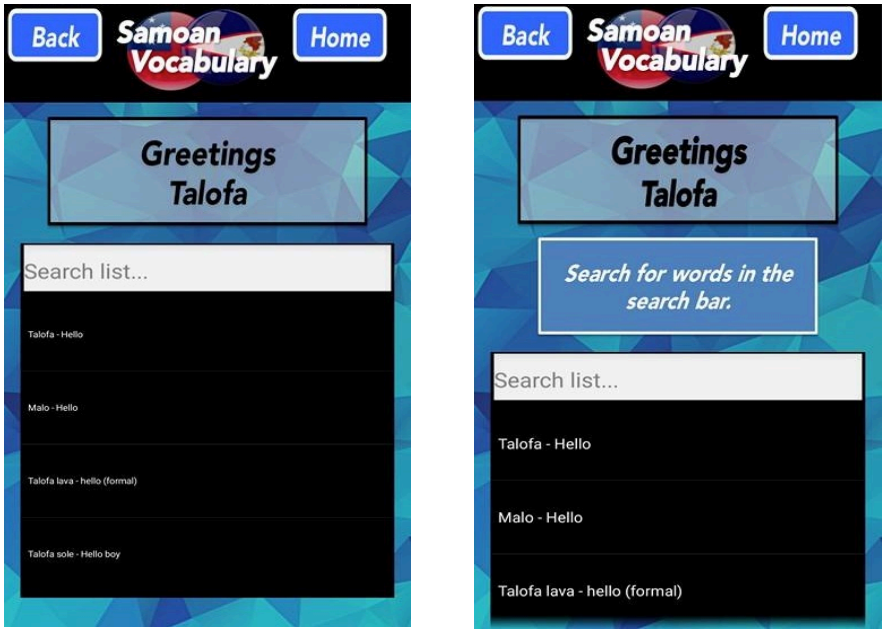

Figure 8. Before and after screenshots of Greetings lesson

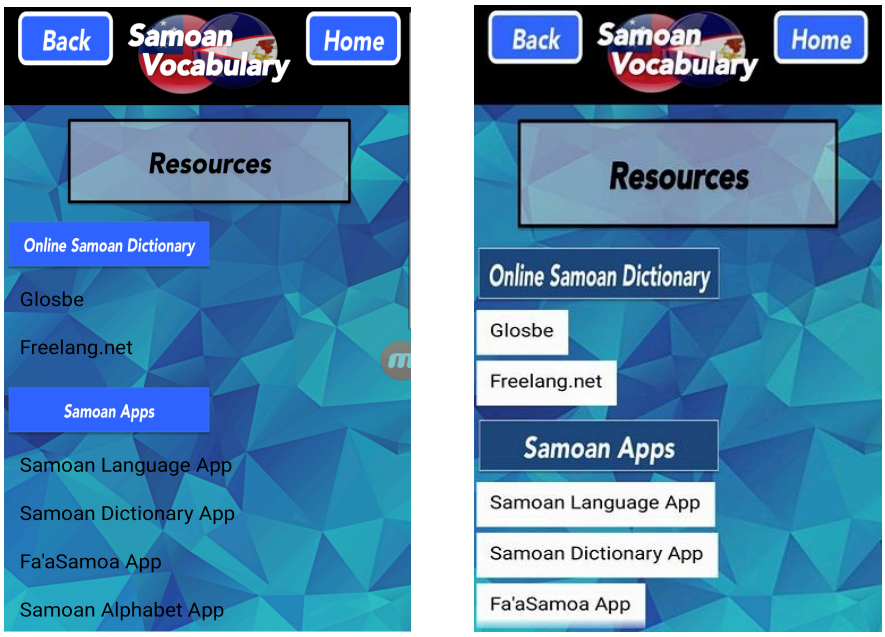

Figure 9. Before and after screenshots of Resources content

Three main questions were picked to compare data from the five participants. There are more other questions on the post survey, but these three were the main focus of the mobile application based on the research questions for this study. The research question for this usability testing are how easy or difficult is it for students to navigate through the app content, are users able to navigate to appropriate learning activities that much a particular learning style, how effective is the information provided from the app, and how easy or difficult is it for students to use the app. The questions of the survey asked the participants about how easy was the app to navigate, is the app user-friendly, and if the app is effective in providing Samoan vocabularies. All participants rated it 5 except one of them rate it less than a five (Figure 10). A word cloud was created for the final question of the survey that asked the participants about how likely they would use the app. In the word cloud it shows the participant's responds to the question (Figure 11).

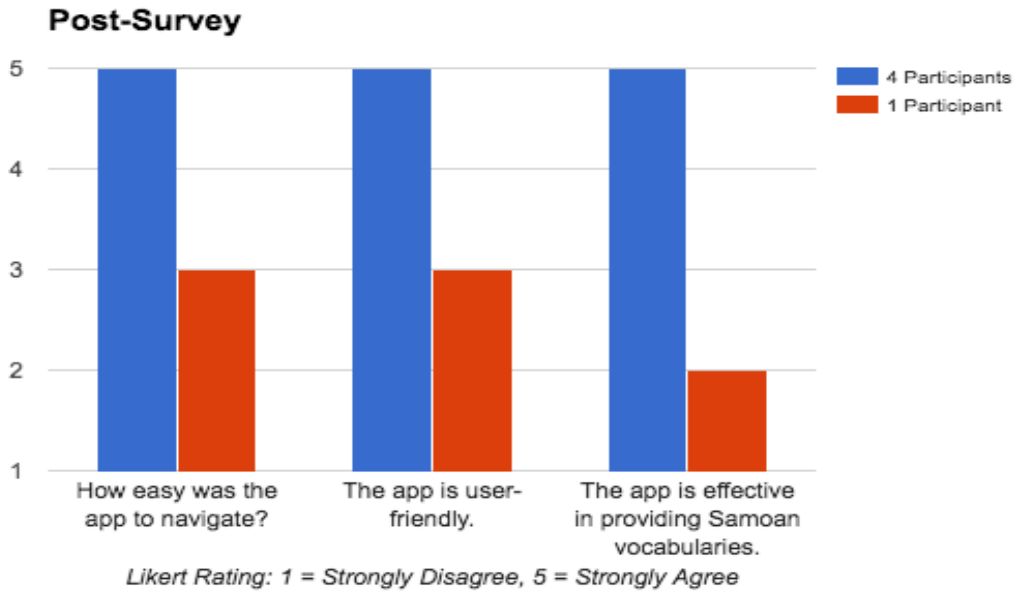

Figure 10. Round 1 post-survey result.

Figure 11. Round 1 post-survey last question Word Cloud

Second Round

There were five participants for the second round of usability testing. There were four female and one male, and range in age from 22-25. All participants were Samoan, some of them don't know how to speak the language, some knows basic words, and some do know how to speak Samoan. All testing was done in person at a various places on the

university campus. During this second round of testing, all participants agree not to record them as they proceed through the usability study.

Participants in the second round were also able to navigate the app easily. Again, all five participants were asked to rate their experience with the application during the testing. They were asked to rate the ease of navigation on a scale from one through five, with one representing very difficult and five representing very easy. Three participants rated the app Five, and two participants rated the application four. The three participants found the app easy to navigate and easy to understand. However, the fourth participant found the color too bright and the font hard to read. The fifth participant found the app confusing between the flashcards and test because she was confused on which of those two she should test herself according to one of the questions from the tasks in the script.

There were a few suggestions from the participants after the testing. Changes made included changing the instructions for number lesson in the intermediate vocabulary content, altering the formatting of buttons on the flashcard screen (Figure 12), changing the test names on the buttons (Figure 13), making bold the subtopics in resources, and making the titles bigger than the instructions. These changes improved the application and made it more appealing for users to learn the Samoan language. (See Appendix G for screenshots of the app).

Figure 12. Before and after screenshots of Flashcards content

Figure 13. Before and after screenshots of Test content

Generally, the application was well received. Again, three main questions were picked to compare data of the second round from five participants. There are more other questions on the post survey, but these three were the main focus of the mobile application based on the research questions for this study. The questions on the survey asked the participants about how easy was the app to navigate, was the app user-friendly, and if the app was effective in providing Samoan vocabulary. All participants rated it a four or five (Figure 14). A word cloud was created for the final question of the survey that asked the participants about how likely they would use the app. The word cloud shows participant's responds to the question (Figure 15).

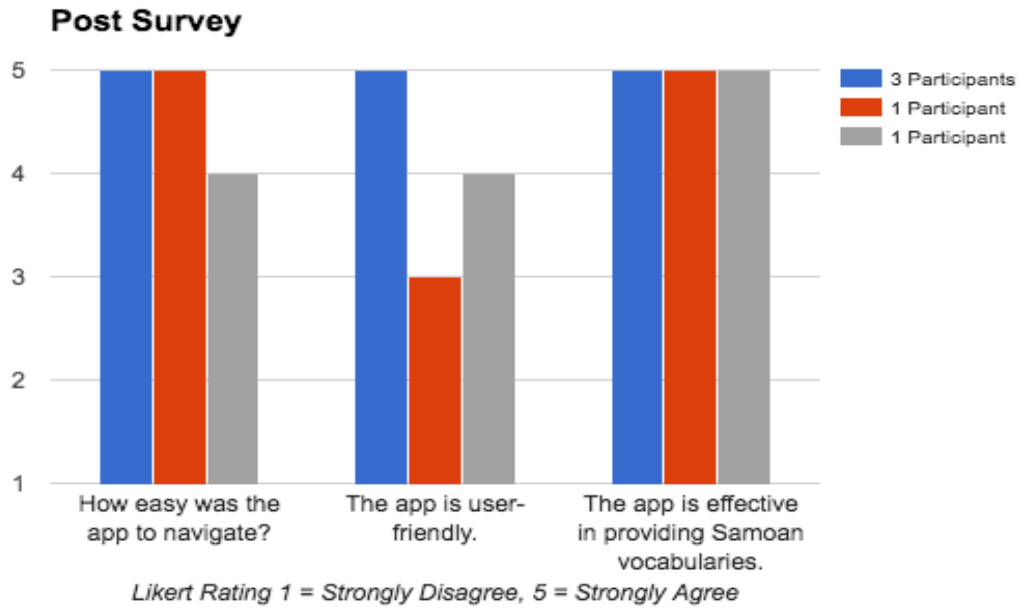

Figure 14. Round 2 post-survey results.

Figure 15. Round 2 post-survey last question Word Cloud

Discussion

Overall, the Samoan Vocabulary App was well created and labeled. Both rounds of usability testing provided feedback for improvements regarding navigation, ease of use, and effectiveness of the mobile application. Based on the attitudinal surveys, it was determined that participants would not only use the app to learn the Samoan language but also recommended it to others.

A few difficulties occur throughout the development process of the application. During the elaboration of the app, MIT App allows and supports only ten screens. The user can create more than ten screens, but it will cause some issues with the application. First, it slows down the loading of the app on the platform and the mobile device. Second, it doesn't show some images and text on the mobile screen. Lastly, the users laptop always freezes when revisions are made on some screens. There was no way to resolve this issue unless I limited or deleted some screens. The issue that I encountered throughout this development was loading the app on the mobile device. It takes about 10 minutes or more for the app to load until it shows on the smartphone or the laptop.

There were further MIT App Inventor issues that appeared during the development process. First issue was the difference between the interface previews on the laptop versus the interface on an Android device. After importing images and text, the margins, image size, and text size were either too big or small compared to the interface on a smartphone (Figure 16). Because of the differences between the two interfaces, component margins, buttons, image and text size had to be fixed multiple times. Another issue was the ability to add or copy the same components to another screen. Each component has to be inserted into each screen, then have its properties modified to match.

For example, the background color, the " Back" button, the "Center Title" and the "Home" buttons at the top of all screens had to be inserted into each screen at the top. Furthermore, the App Inventor included three ways to view live previews of the application on any Android device. The user could see the app either using the emulator on the laptop, on-screen Android emulator or connect USB to the laptop. However, the app that accompanied the tool would often crash, doesn't show the application at all or missing some components on the screen, and a "Companion Connection Error" would be shown on the laptop screen. I would recommend using USB because it's the only option that will show everything on the screen, even though it takes ten minutes or more to load.

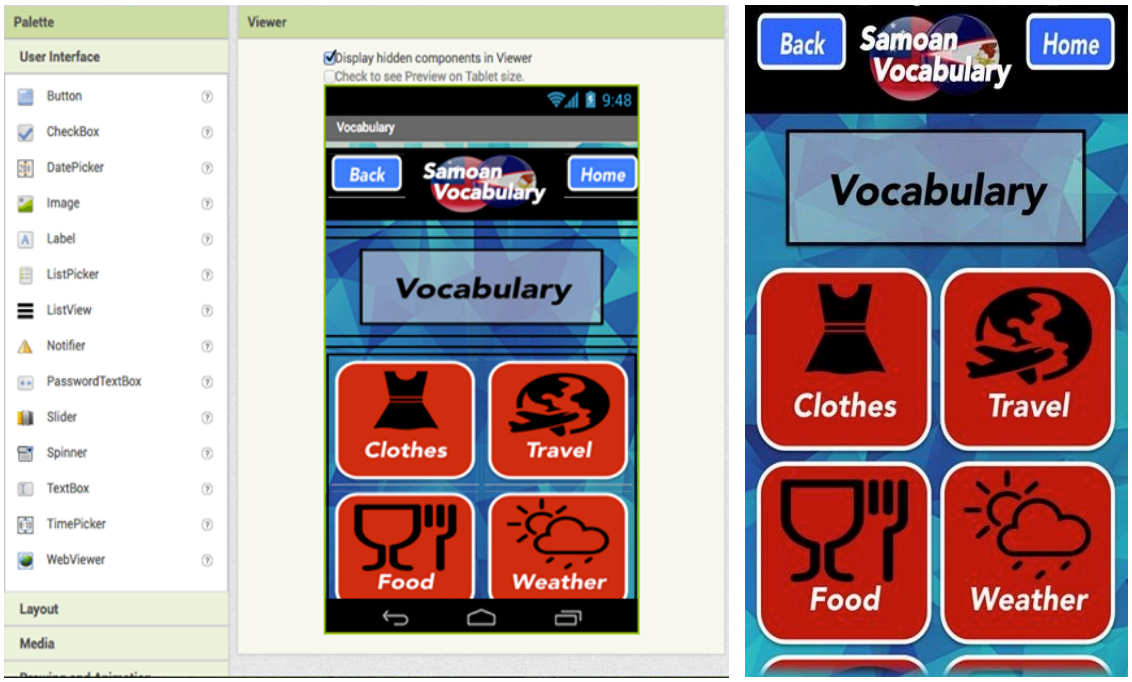

Figure 16. Screenshots of interface on Laptop screen versus interface on Android screen.

Though the results were good, this usability study was limited in collecting data to make improvements on the Samoan vocabulary app. Only two rounds of usability testing were conducted and each round consist of five participants. The data received from qualitative and qualitative was limited as a result. Further testing should be done to make final changes to the app.

Conclusion

The main point of this usability study is to provide a Samoan vocabulary app for Samoan students to learn the basics of the language and to improve their language learning. This study helped identify the issues from the application and make improvements to the app's ease of use and its effectiveness for the users. The Samoan language learners can use this tool to assist them with their vocabulary knowledge. Additionally, I hope this mobile app could be used by the Samoan courses at a large University of Hawaii to educate students with their vocabulary development.

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Appendix A

Recruitment Email/Flyer

To: Email Recipients
From: Raisa Ongosia
Subject: Call for Research Participants

The University of Hawai'i is conducting a study

Development and Usability of Samoan Vocabulary Mobile App for Beginner-Intermediate Samoan Students

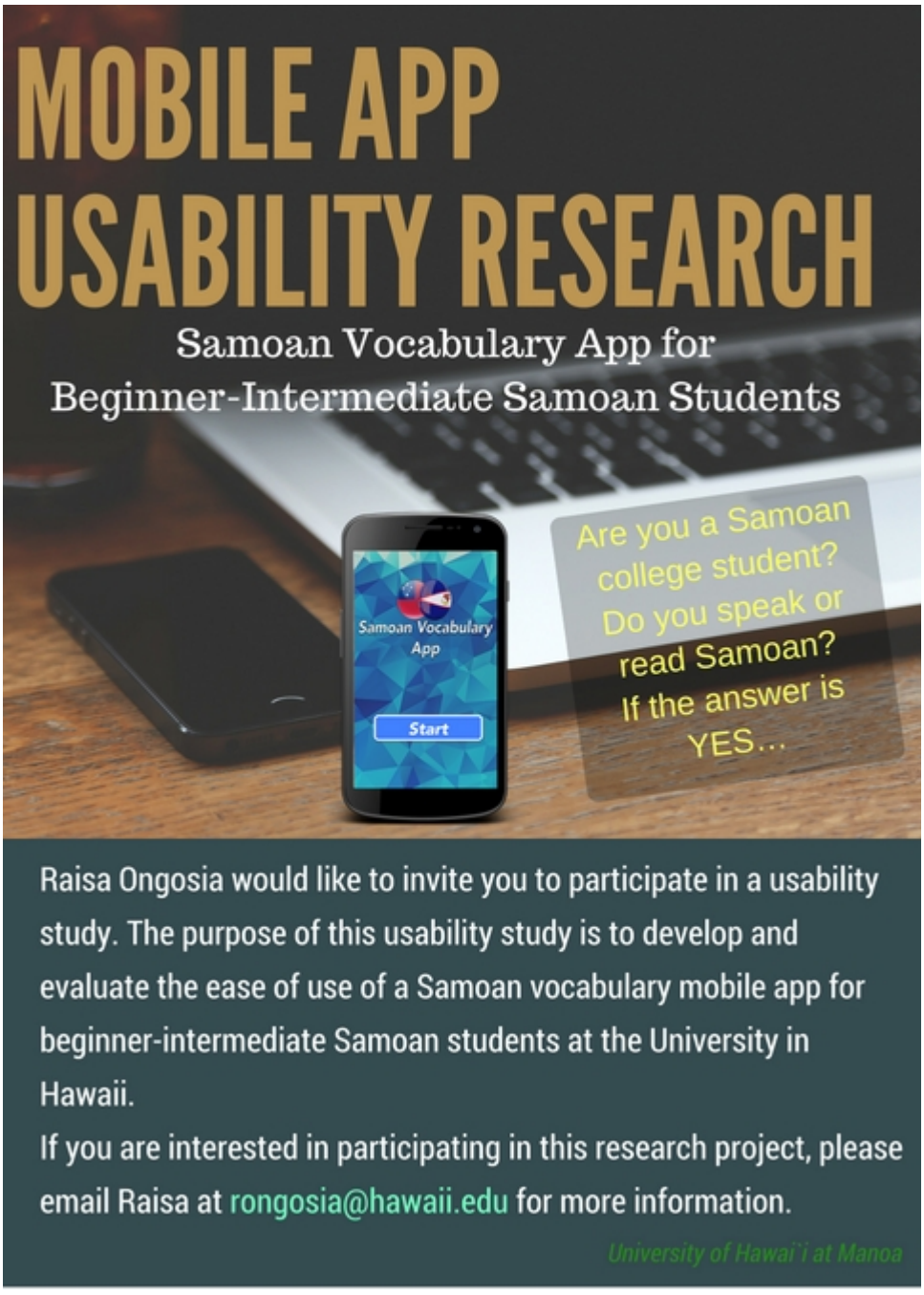
Are you a Samoan college student?
Do you speak or read Samoan?
If the answer is YES…

Raisa Ongosia would like to invite you to participate in a usability study. The purpose of this usability study is to develop and evaluate the ease of use of a Samoan vocabulary mobile app for beginner-intermediate Samoan students at a large university in Hawaii.

- Usability study will be conducted face-to-face with a smartphone provided on at a mutually agreed public location or at the University of Hawaii at Manoa campus.
- All information will be kept strictly confidential.
- A report of the study will be available to study volunteers.

If you are interested in participating in this research project and have received this email, please contact Raisa Ongosia at rongosia@hawaii.edu for more information.

Please see the flyer below.


MOBILE APP
USABILITY RESEARCH
Samoan Vocabulary App for
Beginner-Intermediate Samoan Students
Are you a Samoan college student? Do you speak or read Samoan? If the answer is YES...
Samoan Vocabulary App
Start
Raisa Ongosia would like to invite you to participate in a usability study. The purpose of this usability study is to develop and evaluate the ease of use of a Samoan vocabulary mobile app for beginner-intermediate Samoan students at the University in Hawaii.
If you are interested in participating in this research project, please email Raisa at rongosia@hawaii.edu for more information.
University of Hawai'i at Manoa

Appendix B

Pre Survey

Pre-Survey

This pre-survey is designed to gather background information regarding demographics, Samoan language background and technology use for the research purposes only, and will not be given or shared to outside entities. Complete this survey before participating in the usability study.

* Required

Demographics

1. **What is your gender?** *
   Mark only one oval.
   - ◯ Male
   - ◯ Female

2. **Race/Ethnicity:** *
   Mark only one oval.
   - ◯ African American/Black
   - ◯ Asian/Pacific Islander
   - ◯ Caucasian
   - ◯ Hispanic/Latino
   - ◯ White
   - ◯ Native American/American Indian
   - ◯ Other
   - ◯ Prefer not to answer

3. **How old are you?** *
   Mark only one oval.
   - ◯ Under 25
   - ◯ 25-30
   - ◯ 30-40
   - ◯ 40-50
   - ◯ 50 or more

4. **Are you of Samoan descent?** *
   Mark only one oval.
   - ◯ Yes
   - ◯ No

5. **Do you or anyone in your family speak Samoan?** *
Mark only one oval.

- ◯ Yes
- ◯ No

6. **How often do you hear the Samoan language spoken?** *
Mark only one oval.

- ◯ Always
- ◯ Often
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

7. **Where do you hear the Samoan language being spoken? Select all that apply.** *
Check all that apply.

- ☐ At home
- ☐ At school
- ☐ At work
- ☐ I do not hear it being spoken
- ☐ Other:

8. **What is your major?** *

.....

9. **What type of degree are you pursuing?** *
Mark only one oval.

- ◯ Associate Degree
- ◯ Bachelor Degree
- ◯ Master Degree
- ◯ Doctor Degree

Samoan Language

10. **Are you currently taking a Samoan language course?** *
Mark only one oval.

- ◯ Yes
- ◯ No

11. **What Samoan language course are you taking?** *

.....

12. **How would you rate your current level of Samoan vocabulary knowledge?** *

Mark only one oval.

- ◯ Very Knowledgeable
- ◯ Knowledgeable
- ◯ Neither Knowledgeable nor Unknowledgeable
- ◯ Unknowledgeable
- ◯ Very Unknowledgeable

13. **How would you rate your ability to learn Samoan vocabulary?** *

Mark only one oval.

- ◯ I can learn it very easily.
- ◯ I can learn it easily.
- ◯ Neutral
- ◯ I have a hard time learning it.
- ◯ I have a very hard time learning it.

14. **How would you rate your ability to maintain Samoan vocabulary?** *

Mark only one oval.

- ◯ Very easily to maintain it
- ◯ Easily to maintain it
- ◯ Neither easily nor hard to maintain it
- ◯ Hard to maintain it
- ◯ Very hard to maintain it

Technology

15. **Which mobile devices do you use the most?** *

Mark only one oval.

- ◯ iPad/tablet
- ◯ Smartphone

16. **What model of ipad/tablet or smartphone do you own?** *
Mark only one oval.

- ◯ Apple - iOS
- ◯ Samsung - Android
- ◯ Other:

17. **How often do you download applications in your devices (ipad/tablet or smartphone)?** *
Mark only one oval.

- ◯ Always
- ◯ Often
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

18. **How comfortable are you with using mobile apps?** *
Mark only one oval.

- ◯ Very Comfortable
- ◯ Comfortable
- ◯ Neither Comfortable nor Uncomfortable
- ◯ Uncomfortable
- ◯ Very Uncomfortable

19. **How many apps do you have on your device?** *

.....

20. **Have you ever used a mobile app to learn another language or to perfect your native language?** *
Mark only one oval.

- ◯ Yes
- ◯ No

21. **What mobile app have you used to learn another language?** *

.....

Thank You

Thank you for your response and time. Your information is confidential and will not be shared with anyone other than this research study.

Appendix C

Usability Protocol

Usability Protocol

Modified from Usability Script- Rocket Surgery Made Easy © 2010 Steve Krug

Technology Set-Up Checklist

1. Set up my mobile device
2. Plug in to a power outlet (don't trust the battery)
3. Make sure mobile device has high speed internet or connected to a wifi.
4. Prepare screencasting software and do a brief test to ensure

a. Screen is captured
b. Video of fingers/hands is captured
c. Audio is captured

<u>After mobile device is set up:</u>

1. Load the application
2. Start the recording software

Facilitator Script

Hi, [insert participant's name]. My name is Raisa Ongosia, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

I am asking people to take a look at a mobile app that I designed. I would like to see what you think of it and how you think you would complete a few tasks with an interface like this. The session should take about 40-50 minutes.

The first thing I want to make clear right away is that we're testing the Samoan Vocabulary app, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you complete the tasks, I'm going to ask you as much as possible to try to *think out loud*: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt my feelings. I'm doing this to improve my designs, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone who can help. But if you still have any questions when we're done I'll try to answer them then.

And if you need to take a break at any point, just let me know. You can also choose not to do a task, and you can withdraw from this study at any time. Do you have any questions so far?

OK. Before we look at the app, I'd like to ask you just a few quick questions about your experience with mobile apps.

1. Have you ever built or helped edit a app?

2. If so, what program or software did you use?

OK, great. We're done with the questions, and we can start testing out the app.

Task One: Navigate Samoan Vocabulary Application Homepage

I'm going to ask you to look at this app's homepage and tell me what you make of it:

- What strikes you about it
- What you can do here
- What is it for
- Just look around and do a little narrative. Just tell me your thoughts outloud. You can scroll around if you need to.

Thanks for doing that. You did a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each scenario outloud and I would like you to try and complete the task given in that scenario. You should have received a copy of these before this study. Again, as much as possible, it will help us if you can try to think out loud as you go along.

Task 2: Reviewing Beginner's Lessons of Vocabulary

Scenario:

Imagine that you are a student that is struggling with learning Samoan words and would like to learn the basic Samoan vocabulary. After, you heard about this app that will help you study the fundamentals of Samoan vocabulary for beginners, you decide to download the app and try it out.

- What button do you select to get there?
- What do you think you should do first?
- What types of lesson do you see?
- What do you think about the choice of fonts and pictures?

- Are there any distractions from the lessons that cause you to lose focus on the vocabulary?
- If you could change anything here, what would you change?

Please let me know when you feel as if you've completed the task.

Task 3: Reviewing Intermediate Lessons of Vocabulary

Scenario:

You are a student who already have a basic command of Samoan, and would like to focus your Samoan vocabulary study in the intermediate level.

- How would see all the vocabulary?
- How would you view the flashcards for each word?
- What do you see?
- How do you feel about the presentation of the vocabulary?
- What do you think about the choice of fonts and pictures?
- What would you add or change about this section of the app?
- What would you remove from the app to avoid distractions?

Please let me know when you feel as if you've completed the task.

Task 4: Testing Your Vocabulary Knowledge

Scenario:

Now that you've reviewed the vocabulary of that lesson, you want to test yourself on those words.

- How do you test your Samoan vocabulary knowledge?
- What kinds of activities do you see that will test your knowledge?
- What do you think about the choice of font and images?
- What do you think about the exercises?
- Do you find any distractions from this section?
- If you would change anything here or add something, what would you change or include?

Task 5: Navigate App to Find Help and Resources

Scenario:

You would like to seek for help and explore some resources to get some further information.

- Where on the app would you go to find resources that may help you?

- What types of resources do you see?
- What other types of resources do you think it should be included?

  Thanks, that was very helpful.

We are done with the main questions, but I have a few more general questions to ask you.

1. On a scale of 1 to 5, with 1 representing very difficult and 5 representing very easy, how would you rate your experience during today's testing? Why?

2. After participating in this study, would you recommend this app to any of your friends? Why?

That's the last question, Do you have any questions for me, now that I'm done?

I want to thank you for your time and willingness to be a participant in this study.

- ***Stop the screencasting and audio recording software***

After the Session:

1. Save screencast and audio recording to your local computer
2. Quickly scrub through the audio to ensure the integrity of the audio and video.
3. Make backups of the recording and store it for data analysis use in a safe location.

Thank you for your time!

Appendix D

Post Survey

Post Survey

Please complete this post survey based on your experience with the app.This post-test survey was designed to gather information on overall satisfaction and feedback about the mobile application. This information is to be used for the research purposes only and will not be given or shared to outside entities.

The survey should take about 5 to 10 minutes. As your responses can help me to improve the overall app, please respond in as much detail as possible. Thank you!

* Required

Design Layout

1. **The app features and pages were easy to understand.** *
   Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

2. **The text is clearly written and easy to read.** *
   Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

3. **The images are interesting.** *
   Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

4. **The app is visually appealing.** *
   Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

Navigation

5. **How easy was the app to navigate?** *
Mark only one oval.

	1	2	3	4	5	
Very Hard	◯	◯	◯	◯	◯	Very Easy

6. **The number of buttons and pop-up links are reasonable.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

7. **Were there any confusion with navigating through the app? Why or why not** *

.....

Ease of Use

8. **The app is easy to use** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

9. **The app is user-friendly.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

10. **The app is simple and clear of understanding.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

Effectiveness of mobile application

11. **The information on the mobile application is useful.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

12. **The app is effective in providing Samoan vocabularies.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

13. **I was able to complete the given tasks in the app.** *
Mark only one oval.

	1	2	3	4	5	
Strongly Disagree	◯	◯	◯	◯	◯	Strongly Agree

Comments

14. **Were there any features that were confusing?** *

.....

15. **Do you have any suggestions for improvement?** *

.....

16. **How likely would you use this app?** *

.....

Thank you for taking the time to complete this survey. Your feedback is crucial to help me improve the app.

Appendix E

Consent Form

UNIVERSITY of HAWAI'I at MANOA
College of Education
Master's of Education (MEd), Learning Design & Technology
Usability Research Protocols

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Samoan Vocabulary Application

Aloha! My name is Raisa Ongosia, and I am a graduate student at the University of Hawaii at Manoa. I am conducting this research project as a requirement component for earning my Master's degree in Learning Design and Technology. The purpose of this usability study is to develop and evaluate the ease of use of a Samoan vocabulary mobile app for beginner-intermediate Samoan students at a large university in Hawaii. Your participation in this study will help determine the changes to be implemented on the application to improve experience. I am asking you to participate in this project because you are an adult Samoan college student for whom the mobile application is being developed.

Project Description

Activities and Time Commitment:
Participation will be done in-person on school campus or at a location and time convenient for you, and each participant will be provided with mobile device to access the mobile application. If you participate, you will be asked to navigate through the mobile application while being prompted by a series of scenario questions. These questions are intended to evaluate the ease of use and effectiveness of the application. You will be asked to share your thoughts out loud as you navigate through the app, which will assist researchers in gaining further insights into the user experience. Your actions on the screen and verbal comments will be captured and recorded using Mobizen Screen Recorder. Once all scenarios are completed, the researcher may ask follow up questions as needed.

You will be asked to complete an online Pre-Survey prior to beginning the usability study, as well as a Post-survey after participating. The Post-test survey is intended to gather your attitudinal feedback pertaining the ease of use and effectiveness of the mobile application as a whole. A short debriefing interview will be conducted after completion of the post-test survey to gain further understanding of your experience. The entire usability study, including surveys and debriefing interview, will last about 40-55 minutes.

Confidentiality and Privacy:

The data taken from your participation in this study will be used solely for the purpose of this usability study. The data will be stored securely on a protected computer. When I report the results of my research project, I will not use your name or any other personal information that would identify you. The recordings from this study will be transcribed to determine commonalities from all participants. Once the research is complete, all recordings will be destroyed.

Voluntary Participation:

Participation in this research project is strictly voluntary. You are free to choose to participate or not to participate in this project. You may withdraw your permission or discontinue participation at any time without penalty or loss benefits.

Questions:

If you have any questions regarding your participation in this research study, please contact me via email at rongosia@hawaii.edu

You may also contact Faculty Advisor Catherine Fulford at fulford@hawaii.edu. If you have any questions about your rights in this project, you can contact the University of Hawaii, Human Studies Program, by phone at (808) 956-5007 or by email at uhirb@hawaii.edu.

***Required**
Participant: I have read and understand the above information, and agree to participate in this usability study I understand that I can change my mind about being in the project at any time by notifying the researcher.

Yes
No

Screen and Audio Recording:

I understand that my verbal responses and screen activity will be recorded as I participate in this usability study. These audio recordings will only be accessed by the researcher and will be destroyed once the research is complete.

Yes
No

Please enter today's date

Month: Day: Year:

Name of Participant (Print):_____

Participant's signature:_____

Please print a copy of this page for your reference.

Appendix F

Observation/Interview Guide

Usability Test Observation/Interview Guide

Participant's Name: _____ Test Date: _____

Test Location: _____ Participant Number: _____

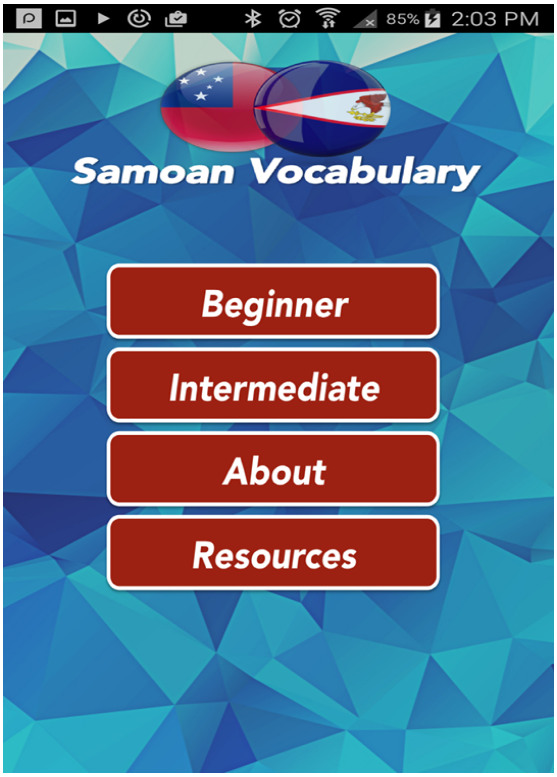
Starting Time: _____ Ending Time: _____

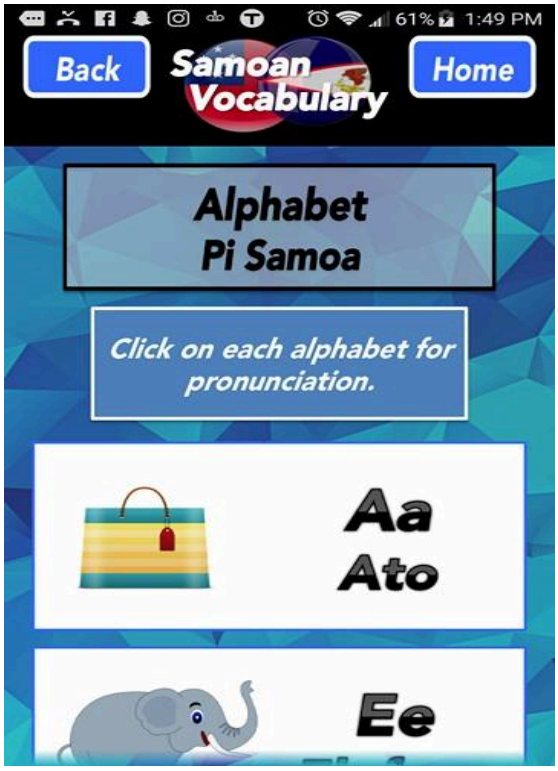
Task #1	**Navigate Samoan Vocabulary Application Homepage**
Notes:	
Task #2	**Reviewing Beginner's Lessons of Vocabulary**
Notes:	
Task #3	**Reviewing Intermediate's Lessons of Vocabulary**
Notes:	
Task #4	**Testing Your Vocabulary Knowledge**

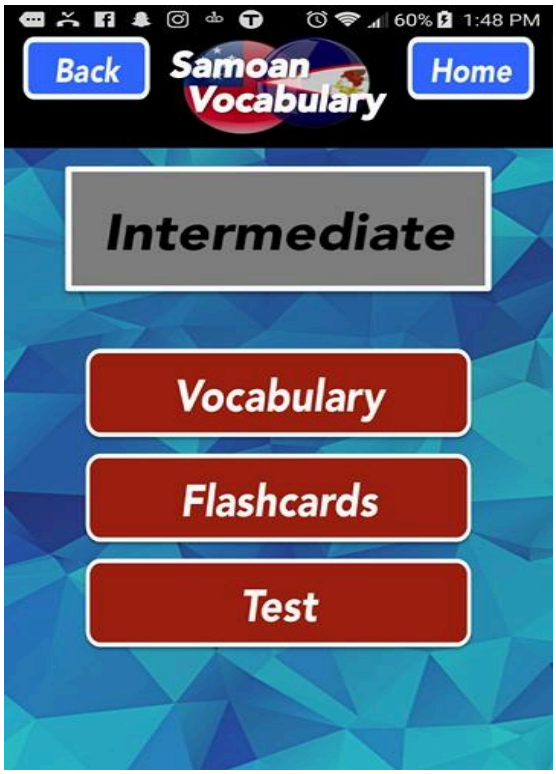
Notes:	
Task #5	**Navigate App to Find Help and Resources**
Notes:	

Appendix G

Samoan Vocabulary App Screenshots



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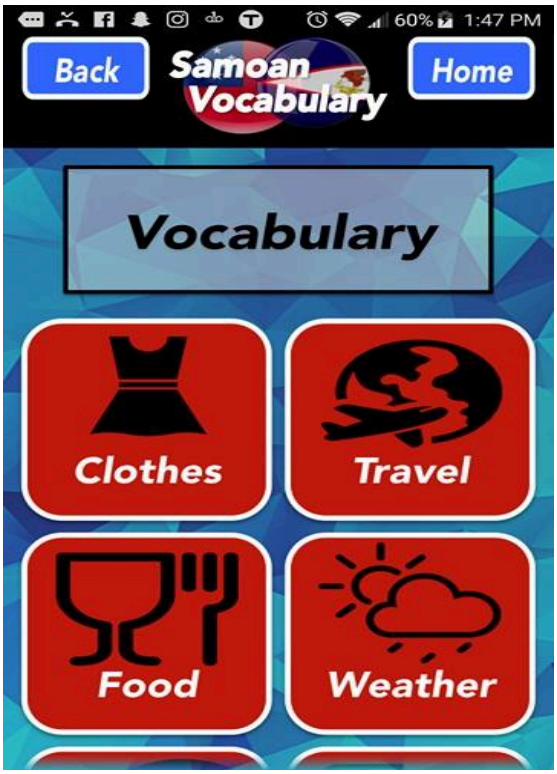
Samoan Vocabulary
Home
Intermediate
Vocabulary
Flashcards
Test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Back
Samoan Vocabulary
Home
Vocabulary
Clothes
Travel
Food
Weather

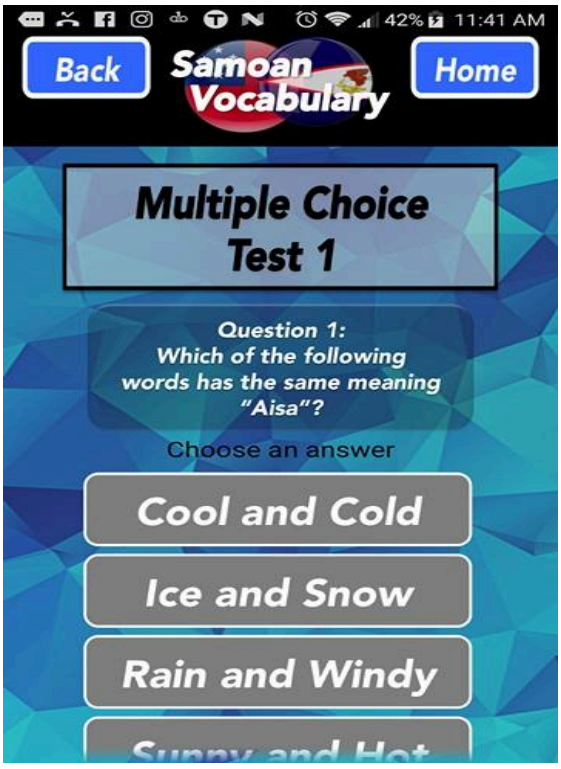

42% 11:32 AM
Back
Samoan Vocabulary
Home
Weather
Tau
Click on each words for pronunciation.
Samoan
English
Aisa
Ice
Aisa
Snow
Auaoa
Cloudy
Leaga le tau
Bad weather


60% 1:46 PM
Back
Samoan Vocabulary
Home
Flashcards
Click on any lessons below to practice your knowledge using flashcards.
Clothes
Travel
Food
Weather
Conversation
Language
Country
Numbers


42% 11:31 AM
Back
Samoan Vocabulary
Home
Clothes – Lavalava Flashcards
Click on each words to flip the card.
Ofulaititi
Totini
Tautaliga
Ofu mafanafana
Ofumoe
Taulima


42% 11:31 AM
Back
Samoan Vocabulary
Home
Clothes – Lavalava Flashcards
Click on each words to flip the card.
Ofulaititi
Socks
Earrings
Ofu mafanafana
Ofumoe
Bracelet


42% 11:31 AM
Back
Samoan Vocabulary
Home
Test Suega
Multiple Choice Test 1
Multiple Choice Test 2
Multiple Choice Test 3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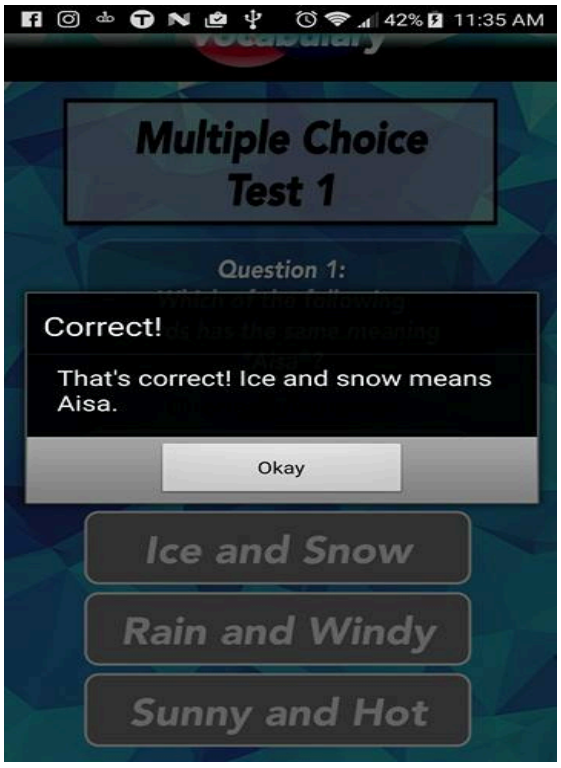
Back
Samoan Vocabulary
Home
Multiple Choice Test 1
Question 1:
Which of the following words has the same meaning "Aisa"?
Choose an answer
Cool and Cold
Ice and Snow
Rain and Windy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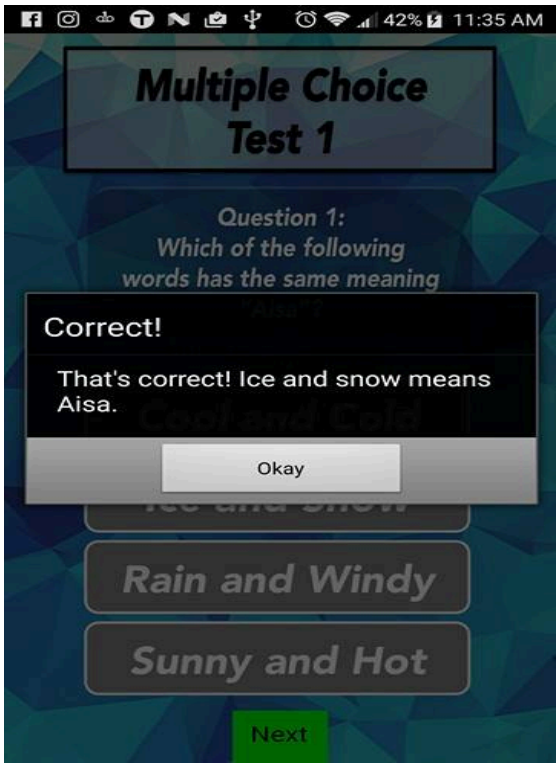
Multiple Choice Test 1
Question 1:
Correct!
That's correct! Ice and snow means Aisa.
Okay
Ice and Snow
Rain and Windy
Sunny and Hot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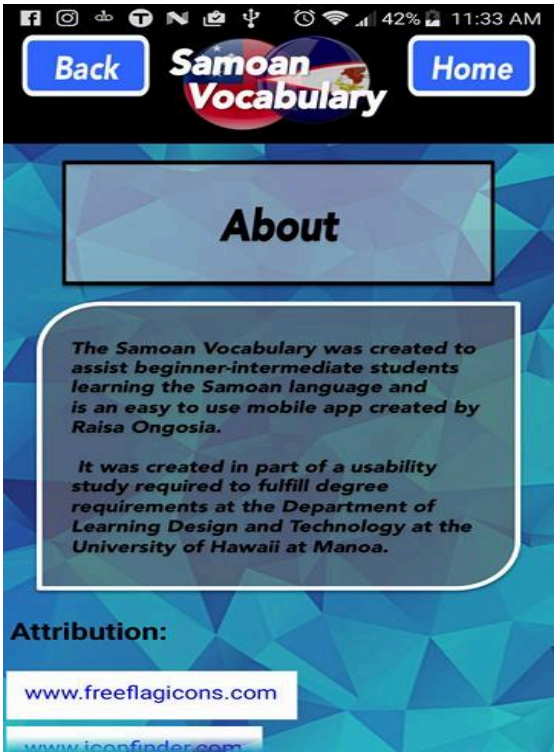
Multiple Choice Test 1
Question 1:
Which of the following words has the same meaning
Correct!
That's correct! Ice and snow means Aisa.
Okay
Rain and Windy
Sunny and Hot
Next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Back
Samoan Vocabulary
Home
About
The Samoan Vocabulary was created to assist beginner-intermediate students learning the Samoan language and is an easy to use mobile app created by Raisa Ongosia.
It was created in part of a usability study required to fulfill degree requirements at the Department of Learning Design and Technology at the University of Hawaii at Manoa.
Attribution:
www.freeflagicons.com


42% 11:34 AM
Back
Samoan Vocabulary
Home
Resources
Online Samoan Dictionary
Glosbe
Freelang.net
Samoan Apps
Samoan Language App
Samoan Dictionary App
Fa'aSamoa App